



University of Pretoria Yearbook 2020

Solid mechanics 321 (MKM 321)

Qualification Undergraduate

Faculty [Faculty of Engineering, Built Environment and Information Technology](#)

Module content Solid mechanics, kinematics of deformation, strain tensor, traction vector, stress tensor and stress resultants. Macroscopic and infinitesimal equilibrium equations. Hooke's law for isotropic media. Strong form of Boundary Value Problem (BVP) of solid mechanics. Weak form of BVP of solid mechanics. Derivation of finite element equations using weighted residuals. Detail development of 1D elements with concepts extended to 2D and 3D. Manipulation of continuum and discrete equations using a high level programming language. Finite element modelling concepts that include Saint Venant's principle, linear superposition, symmetry, anti-symmetry, verification and validation.

Module credits 16.00

Programmes [BEng Mechanical Engineering](#)

[BEng Mechanical Engineering ENGAGE](#)

Prerequisites MOW 227

Contact time 1 practical per week, 3 lectures per week

Language of tuition Module is presented in English

Department Mechanical and Aeronautical Engineering

Period of presentation Semester 2

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